Exhibit A

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS

LAURA SMITH, as duly appointed Representative and Independent Administrator of the Estate of ANDREA MANFREDI, deceased; and LINDA MANFREDI, MAURIZIO MANFREDI and SONIA LORENZONI,

Plaintiffs.

v.

THE BOEING COMPANY, a Delaware Corporation; BOEING INTERNATIONAL SALES CORPORATION, a Washington State Profit Corporation; BOEING DOMESTIC SALES CORPORATION, a Washington State Profit Corporation; BOEING FINANCIAL CORPORATION, a Washington State Profit Corporation; BOEING SALES CORPORATION, a Washington State Profit Corporation; ROSEMOUNT AEROSPACE INC., a Delaware Corporation; and UNITED TECHNOLOGIES CORPORATION, a Delaware Corporation,

Defendants.

Case No. 1:19-cv-7091

COMPLAINT FOR DAMAGES:

1) **STRICT PRODUCTS LIABILITY-DESIGN DEFECT-WRONGFUL DEATH**

2) **STRICT PRODUCTS LIABILITY-DESIGN DEFECT-SURVIVAL**

3) **STRICT PRODUCTS LIABILITY-MANUFACTURING DEFECT-WRONGFUL DEATH**

4) **STRICT PRODUCTS LIABILITY-MANUFACTURING DEFECT-SURVIVAL**

5) **STRICT PRODUCTS LIABILITY-FAILURE TO WARN-WRONGFUL DEATH**

6) **STRICT PRODUCTS LIABILITY-FAILURE TO WARN-SURVIVAL**

7) **NEGLIGENCE-WRONGFUL DEATH**

8) **NEGLIGENCE-SURVIVAL**

9) **BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY-WRONGFUL DEATH**

10) **BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY-SURVIVAL**

11) **BREACH OF IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE-WRONGFUL DEATH**

12) **BREACH OF IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE-SURVIVAL**

13) **NEGLIGENT INFLICTION OF EMOTIONAL DISTRESS SURVIVAL-SURVIVAL**

14) **STRICT PRODUCTS LIABILITY-DESIGN DEFECT-WRONGFUL DEATH**

15) **STRICT PRODUCTS LIABILITY-DESIGN DEFECT-SURVIVAL**

16) **STRICT PRODUCTS LIABILITY-MANUFACTURING DEFECT-WRONGFUL DEATH**

17) **STRICT PRODUCTS LIABILITY-MANUFACTURING DEFECT-SURVIVAL**

18) **STRICT PRODUCTS LIABILITY-FAILURE TO WARN-WRONGFUL DEATH**

19) **STRICT PRODUCTS LIABILITY-FAILURE TO WARN-SURVIVAL**

20) **NEGLIGENCE-WRONGFUL DEATH**

21) **NEGLIGENCE-SURVIVAL**

22) **BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY-WRONGFUL DEATH**

23) BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY-SURVIVAL

24) BREACH OF IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE-WRONGFUL DEATH

25) BREACH OF IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE-SURVIVAL

26) NEGLIGENT INFLICTION OF EMOTIONAL DISTRESS-SURVIVAL

DEMAND FOR JURY TRIAL

INTRODUCTION

1. This action is brought on behalf of the estate of Andrea Manfredi, as well as on behalf of his surviving next of kin: Sonia, his mother, Maurizio, his father, and Linda, his twin sister.

2. Andrea Manfredi, whose life was tragically cut short when he perished in the Lion Air Flight 610 crash on October 28, 2018, was an Italian national, living and residing in Italy, and the only individual aboard Lion Air Flight 610 who had no relation or connection to Indonesia.

3. The crash of Lion Air flight 610 was the result of a combination of factors that ended, at 6:33 am local time on October 29, 2018, in the Java Sea, off the north coast of

Karawang Regency, Indonesia.

4. But where it all began was not in Indonesia, it was in the United States. Plaintiffs here are informed, believe, and thereon allege that in fact this all began at a meeting in Seattle, at the Boeing Company's Renton, Washington Factory, the facility where Boeing 737 Next Generation and Boeing 737 MAX airliners are built. There, in 2011, an irresponsible decision was taken to deviate from a plan to design a new aircraft and instead retool the 737 platform with, among other things, new engines. This decision, which was motivated solely by a desire to maximize profits, would do two things. First, it would hand Defendant Boeing the most successful commercial aircraft of its history, accumulating over 5,000 orders and yielding a projected business volume in excess of half a trillion dollars, with projected profits exceeding $50 billion dollars and with a program cost estimated at "only" $2 billion dollars. Second, it would simultaneously hand hundreds of people, including Plaintiff Andrea Manfredi, a death sentence.

5. Defendants The Boeing Company, Boeing International Sales Corporation, Boeing Domestic Sales Corporation, Boeing Financial Corporation, Boeing Sales Corporation, Rosemount Aerospace Inc. and United Technologies Corporation, each bear responsibility for the tragic and deadly flaws of the 737 MAX, a plane that was the result of a "profits over safety" mentality that ultimately led to the tragic loss of hundreds of lives, including that of Andrea Manfredi.

PARTIES

6. At all relevant times, Decedent Andrea Manfredi ("Decedent" or "Andrea") was an Italian citizen and a resident of Massa, Italy.

7. Decedent maintained no contacts with Indonesia, and was simply visiting Indonesia as a tourist, following a two-week stay in Hong Kong for work.

8. Plaintiff Maurizio Manfredi ("Maurizio") is an Italian citizen and resident of Massa, Italy. Mr. Manfredi was Decedent's father.

9. Plaintiff Sonia Lorenzoni ("Sonia") is an Italian citizen and resident of Massa, Italy. Mrs. Lorenzoni was Decedent's mother.

10. Maurizio and Sonia are lawfully married husband and wife.

11. Plaintiff Linda Manfredi ("Linda") is an Italian citizen and resident of Massa, Italy. Ms. Manfredi was Decedent's twin sister, and shared an exceptionally close relationship with Andrea.

12. Plaintiffs Estate of Andrea Manfredi, Maurizio Manfredi, Sonia Lorenzoni and Linda Manfredi will be collectively be referred to as "Plaintiffs."

13. Plaintiffs Maurizio Manfredi, Linda Manfredi and Sonia Lorenzoni, have never been to Indonesia, do not have any contacts in Indonesia, and do not speak Indonesian.

14. On October 17, 2019, Linda Manfredi filed a Petition for Letters of Administration with the Circuit Court of Cook County Probate Division.

15. The Probate Court having been advised that the proposed representative of the Estate of Andrea Manfredi to be qualified to act as administrator under Section 9-1 of the Probate Act of 1975 [755 ILCS 5/9-1], entered an Order that Letters of Administration shall issue to Laura Smith as Independent Administrator of the Estate of Andrea Manfredi.

16. On October 17, 2019, the Circuit Court of Cook County Probate Division entered an order declaring the heirs of Andrea Manfredi to be Maurizio Manfredi, Sonia Lorenzoni and Linda Manfredi.

17. Laura Smith, as duly appointed Independent Administrator of the Estate of Andrea Manfredi, on behalf of the heirs of Andrea Manfredi brings this action on behalf of the Decedent's estate and the surviving heirs at law, next of kin, and wrongful death beneficiaries, namely Maurizio Manfredi, Sonia Lorenzoni and Linda Manfredi.

18. Defendant The Boeing Company is a Delaware corporation with its principal place of business in Chicago, Illinois.

19. Defendant Boeing International Sales Corporation is a Washington State profit corporation with its principal place of business in Chicago, Illinois.

20. Defendant Boeing Domestic Sales Corporation is a Washington State profit corporation with its principal place of business in Chicago, Illinois.

21. Defendant Boeing Financial Corporation is a Washington State profit corporation with its principal place of business in Chicago, Illinois.

22. Defendant Boeing Sales Corporation is a Washington State profit corporation with its principal place of business in Guam.

23. Defendants The Boeing Company, Boeing International Sales Corporation, Boeing Domestic Sales Corporation, Boeing Financial Corporation, and Boeing Sales Corporation will be collectively referred to in this Complaint as "Boeing" and/or the "Boeing Defendants."

24. Defendant Rosemount Aerospace Inc. is a Delaware corporation with its principal place of business in Minnesota.

25. Defendant United Technologies Corporation is a Delaware Corporation with its principal place of business in Connecticut.

26. Defendant Rosemount Aerospace Inc., is a Burnsville-based wholly owned

subsidiary unit of United Technologies Corp.

27. Defendants Rosemount Aerospace Inc. and United Technologies Corporation will be collectively referred to in this Complaint as "Rosemount" and/or the "Rosemount Defendants."

28. The Boeing Defendants and the Rosemount Defendants are collectively referred to in this Complaint as "Defendants."

29. Plaintiffs are informed and believe, and upon such basis allege, that at all times herein mentioned, each of the Defendants herein was an agent, servant, employee, co-conspirator, partner, joint venturer, wholly owned and controlled subsidiary and/or alter ego of each of the remaining Defendants, and was at all times acting within the course and scope of said agency, service, employment, conspiracy, partnership and/or joint venture.

30. Defendants, and each of them, aided and abetted, encouraged and rendered substantial assistance in accomplishing the wrongful conduct and their wrongful goals and other wrongdoing complained of herein. In taking action, as particularized herein, to aid and abet and substantially assist the commission of these wrongful acts and other wrongdoings complained of, each of the Defendants acted with an awareness of its primary wrongdoing and realized that its conduct would substantially assist the accomplishment of the wrongful conduct, wrongful goals, and wrongdoing.

JURISDICTION AND VENUE

31. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. § 1332 because no defendant is a citizen of the same state as any plaintiff and because the amount in controversy exceeds $75,000, exclusive of interest and costs. This Court also has

subject matter jurisdiction over this action pursuant to 28 U.S.C. § 1369 because this action arises from a single accident where at least 75 natural persons have died at a discrete location, at least two defendants reside in different states, and the adverse parties are at least minimally diverse.

32. Venue is proper pursuant to 28 U.S.C. § 1391(b) & (c) because a substantial part of the events or omissions giving rise to the claim occurred in this judicial district, because Defendants carry on business and reside within this judicial district, and because Defendants are subject to the Court's personal jurisdiction in this judicial district.

FACTS

ANDREA MANFREDI – ONE OF A KIND

33. On October 29, 2018, Andrea Manfredi was a marvelous 26-year-old kid. He was traveling in Asia for work, in Hong Kong to be exact, away from his native Italy, with the specific purpose of conducting business meetings destined to expand the distribution of his products in the US and in Asia, as well as seeking additional suppliers capable of keeping up with the expanding business. Once done with work, he had decided to go visit a friend in Indonesia, and relax with him prior to his planned return to Italy, a week later. Back home, his mother and father were running his two other businesses: a construction company and an interior design and furnishing business. His twin sister was also helping out, assisting with Andrea's main business, Sportek.

34. In fact, Andrea was anything but an ordinary millennial guy in his 20s. He was a professional athlete, an entrepreneur and a philanthropist.

35. As a professional cyclist, Andrea had raced for some of the most important cycling teams in Italy, including the famed Bardini–CSF. Bardiani–CSF, a professional continental cycling team registered in Italy that participates in UCI Continental Circuits races and when selected as a wildcard to UCI ProTour events, is regarded in the Italian and international cycling world as a top team. As of October 29, 2018, Andrea had won over 65 cycling races, and was keen on winning more. He was about to end a two-year sabbatical from competing that he had decided to take in order to better manage his businesses.

36. As an entrepreneur, Andrea was doing well. Very well. He was employing his parents and his sister full time, as well as several other full-time employees and several contractors. His activities spanned two main sectors.

37. The construction business was something he understood well, and his company, AM Casa, handled everything pertaining to home building, renovations, interior design and home furnishings. He had hired his father to run and oversee the work sites that required construction or renovations, and had hired his mother to oversee the furnishing store. His twin sister helped with the interior design, but Andrea wanted to be hands-on with the clients, and he therefore personally handled the procurement of business, the oversight of the company, and the interior design.

38. The technology business started from Andrea's love of cycling. Unable to find equipment that worked as he thought it should, he began designing his own. From there, he started Sportek, a company that designed, built, distributed, and sold professional grade sports equipment, including different types of GPS-enabled cycle-computers, GPS training devices, heart rate monitors, pace and cadence monitors, as well as various accessories for the same. The Sportek products were widely known in the cycling world and were distributed both within Italy

and outside of Italy.

39. At the time of his death, Andrea was expanding both businesses. He was in Hong Kong to meet his business partners, after having established a limited company in Hong Kong earlier the same year. Upon his return in Italy, he was supposed to have a final meeting for the building of a multi-million-dollar mansion outside of Massa.

40. As a blossoming philanthropist, Andrea dedicated his spare time to coaching cycling and helping kids in need. He was a role model, mentor, and friend to many.

41. By all accounts, Andrea was a well-rounded and successful young man, and what people uniformly define as a rising star.

OCTOBER 29, 2018 – HOW IT ALL ENDED

42. October 29, 2018 was a blue-sky morning in Jakarta, with a few scattered clouds. Andrea Manfredi had boarded Lion Air Flight 610 headed to Depati Amir Airport in Pangkal Pinang, on a Boeing 737 MAX airplane. He had been assigned a seat at check-in and was traveling with his friend Verian Utama, who he had met in Jakarta following a two-week work stint in Hong Kong.

43. The captain assigned to the flight was a 31-year-old pilot from India named Bhavye Suneja, who had done his initial flight training at a small and now-defunct school in San Carlos, California, and had subsequently opted for an entry-level job with Lion Air in 2011.

44. By all measures, Captain Suneja was a well-rounded pilot.

45. Captian Suneja's co-pilot was an Indonesian man, 10 years his elder, who went by the single name Harvino and had nearly the same flight experience. On this leg, the co-pilot would handle the radio communications.

46. The airline, Lion Air, was and is a well-known airline in Indonesia that dominates the rapidly expanding Indonesian market in low-cost air travel. It is also one of Boeing's largest customers worldwide.

47. As of the day of the accident, Suneja had accumulated over 6,000 hours of flight time (6,028 hours and 45 minutes of flight time to be exact, including 5,176 hours on the Boeing 737) and his co-pilot Harvino had accumulated over 5,000 (5,174 hours of flight experience to be exact, 4,286 of them on the Boeing 737).

48. The aircraft was a Boeing 737 MAX 8, with registration numbers PK-LQP and line number 7058. The aircraft was not owned by Lion Air, rather, it was leased from China Minsheng Investment Group (CMIG) Aviation Capital and delivered new to Lion Air in Seattle, Washignton, on August 13, 2018. By October 29, 2018, this specific aircraft had flown about 800 hours in service, all under the flag of Lion Air.

49. The flight was assigned a standard departure route over the Java Sea. At 6:20 a.m., it was cleared for takeoff.

50. To the passengers, including Andrea Manfredi, the takeoff would have appeared ordinary. In the cockpit however, upon rotating and lifting off the ground, something immediately appeared off to Captain Suneja, as his stick shaker alarm immediately went off.

51. The stick shaker, which is a mechanical warning device that rapidly and noisily vibrates the control column (referred to also as a "yoke" or the "stick") of an aircraft to warn the pilot when a stall is imminent, was giving a false stall warning. While the plane's internal systems thought the 737 MAX plane was about to stall, there was actually no danger of the plane stalling. Instead, this false alert was the first of a string of mechanical and design failures of the 737 MAX, which ultimately would prove deadly and that led the plane to crash into the

Java Sea, killing everyone on board.

52. Captain Suneja was dealing with an information failure only — not an actual stall. The co-pilot's stick shaker had not activated, so whatever the failure was, and it turned out to be an angle-of-attack sensor, the other side of the cockpit was working fine.

53. The first external hint of trouble came about a minute later, after a departure controller cleared the flight for a climb to 27,000 feet. Harvino asked the controller to confirm the airplane's current altitude as shown on the controller's display. The controller answered that he showed the altitude as 900 feet, and Harvino acknowledged him without comment.

54. Twenty-five seconds later, Harvino requested a clearance to "some holding point" where the airplane could hold in the sky. The controller did not provide a holding point but asked about the nature of the problem. Harvino answered, "Flight-control problem." He did not mention which kind. The controller asked about their intended altitude. Harvino answered 5,000 feet.

55. Two and a half minutes after takeoff, as the airplane was climbing through 2,175 feet, it suddenly went into a violent 700-foot dive, rounding out of it at 1,475 feet and pulling into an uncertain climb. No turn was associated with the plunge. Right from the start of the investigation, suspicions focused on Lion Air 610's elevator trim mechanism — and specifically on the possibility of a failure known as a runaway trim.

56. Trim can be thought of as a balance point, or the attitude at which an airplane naturally rides when aerodynamic input deflections are applied. This can be imputed to each of the three components of flight, namely elevator trim, rudder trim, and aileron trim. The elevator trim refers to an aerodynamic condition related to the pitch of the aircraft, otherwise described as the nose-up-or-down attitude of an airplane in flight. The rudder trim refers to the adjustment

of the yaw of an aircraft, or the left and right movement of the nose in flight. The aileron trim refers to the adjustment of the roll of the aircraft, left or right.

57. The trim of an aircraft is routinely adjusted in flight to maintain level flight, including the elevator trim. In the Boeing 737 MAX, the adjustments to the elevator trim are made by the use of thumb switches on the control wheels when the pilots are "hand flying" the airplane manually, as they would on takeoff and landing. The thumb switches control an electrohydraulic mechanism that changes the angle of the horizontal stabilizer — the all-important tail surface that counteracts the natural pitching effects of the wings and provides the necessary aerodynamic balance for flight, as well as controls the pitch of the aircraft.

58. In its functioning, the electric trim is smooth, powerful, and usually well-behaved. On occasion, however, it may start running on its own volition and prompt the airplane to nose up or down, which is referred to as a runaway trim. Such failures are typically easily countered by the pilot, first by using the control column to give an opposing elevator input and then by flipping a couple of switches to shut off the electrics before reverting to a perfectly capable parallel system of manual trim.

59. Lion Air 610 climbed to 5,000 feet and stayed there shakily for an additional six minutes. Soon it was out over open water. At some point, Harvino declared the crew's intent to return to the Jakarta airport. Air-traffic control approved the return and later advised the crew to plan on Runway 25 Left, the closest runway to their position. However, nothing occurred as a result. Instead, the airplane kept flying away from the airport.

60. Harvino asked the controller for the airplane's ground speed, and received a response of 322 knots (371 miles per hour).

61. At 6:31 a.m., 11 minutes into the flight, Captain Suneja got on the radio for the

first time. He did not know their altitude, he told the controller, because all their altitude indicators were showing different values. Perhaps reflecting the strain he felt, Suneja misidentified himself as Lion Air 650. Appropriately, the controller acknowledged Suneja's transmission without quibbling and responded, "No restriction."

62. A few seconds later, Captain Suneja asked the controller for a block clearance to all altitudes 3,000 feet above and below his current altitude for traffic avoidance. The controller, who had just heard Suneja say he did not know his altitude, asked him what altitude he wanted. Captain Suneja answered, "Five thou."

63. Captain Suneja was shepherding 189 hapless souls through the sky, including his own, and struggling with a confusing failure of some kind that he could simply not identify, and which was becoming overwhelming to handle. Tellingly, as of the morning hours of October 29, 2018, there was no way for any pilot flying a 737 MAX aircraft to know about the potential failure of the Maneuvering Characteristics Augmentation System (MCAS) and the runaway trim.

64. In fact, following the accident, the flight-data recording indicated that the immediate culprit was a sensor failure tied to a new and obscure control function that was unique to the 737 MAX: the MCAS. Simply put, the MCAS system automatically applies double-speed impulses of nose-down trim, but only under circumstances so narrow that no regular airline pilot will ever experience its activation — unless a sensor fails. For whatever reason, until a week following the crash of Lion Air 610, Boeing did not publicly or privately inform operators or pilots of its existence, did not include a description of it in the airplane's flight manuals, and did not provide a solution for how to handle a sensor failure.

65. Shortly after the accident of Lion Air 610, Jon Weaks, president of the

Southwest Airlines Pilots Association, the largest group of pilots in the world with 737 experience, said "Any time a new system is introduced into an airplane, we are the people responsible for that airplane." Referring to the addition of MCAS, Weaks added, "We felt and we feel that we needed to know about that, and there's just no other way to say it."

66. Captain Suneja had not been told about the MCAS, had not been told about the possibility of the runaway trim as a result of an MCAS's input error, and he had not been told or shown how to address the situation.

67. Captain Suneja was an airline pilot up against a relentless, unceasing and mostly unknown force that somehow continued to manipulate the way the airplane stayed in the air. He was a pilot unable to resolve an issue that is incessantly taking over the airplane's aerodynamic dynamics, and is continuously pushing the plane downwards. He was becoming overwhelmed.

68. "Five thou" was his final transmission. Twelve minutes into the flight, Lion Air 610 disappeared from radar.

12 YEARS BEFORE THE ACCIDENT – YELLOWSTONE 1

69. In 2006, Boeing started considering the replacement of the 737 with a "clean-sheet" design that could follow the Boeing 787 Dreamliner. "Clean-Sheet" is jargon in the engineering world for no restraints, or a brand-new design. In the world of Boeing, with the 737 design functionally dating back to 1964, this meant a completely new aircraft: new design, new characteristics, new engines, new technology. In short, a new plane.

70. While Boeing had been considering the replacement jet for some time, 2006 marked a year of change, of action. The Boeing 737 replacement study (737RS) proceeded formally, and found a director in Mike Cave, at the time Boeing Commercial Aircraft's (BCA)

vice president for aircraft programs. This replacement study was confirmed in a press release in March of 2006. Cave would lead the 737RS planning team, with an original announcement target date of 2012-2015 for a successor to the then-current model, the 737 Next Generation ("737 NG") twin jet, as a clean sheet design.

71. At the time, Boeing was understood to have advanced its 100-200 seat Yellowstone 1 (Y1) jet studies, Yellowstone 1 being code name for the new narrow body jet intended to replace the market segment aircraft at the time occupied by the 737. Sharing a common research pool as the Y2, which became the 787, any new 737RS/Y1 would have shared technology with the long-range twin jet 787.

72. In December of 2005, BCA chief executive Alan Mulally, had said that a replacement for the narrowbody 737 would enter service between 2012 and 2015, in a bid to beat Airbus, which had its own new Short Range aircraft replacement studies for the rival narrowbody A320 family slated for a similar timeframe. Additionally, the RS/Y1 concept was supposed to be based around an all-composite 787-like structure, fly-by-wire, more-electric system architecture, less hydraulic systems, EVS-integrated avionics flight deck, and a cabin cross-section "wider than A320." Aerodynamic improvements were said to include a wing of increased span, single-slotted flaps, raked and blended-winglet wingtip options, blended fin root and 787-like Section 41 (nose) and flight deck.

73. In the same year, Boeing also confirmed that Carolyn Brandsema, director of engineering for the 737 multi-mission maritime aircraft, would direct the production planning for the 737RS. Boeing also confirmed that the other leaders of the team for the 737 replacement jet would include high ranking Boeing employees, including marketing vice-president Kent Fisher, who would assess market demand for a new aircraft, and finance director Rod Wheeler,

who would investigate cost issues. Last, program management matters were assigned to the responsibility of Don Moon, a Boeing manager, previously on the 787 Development team.

74. Boeing submitted a patent application in November 2009, released to the public in August 2010, that envisioned an elliptical composite fuselage and likely signaled the company's planning for the 737 successor.

75. Shortly thereafter, in mid 2010, Boeing Commercial Aircraft CEO Jim Albaugh confirmed this notion and said in an interview that second- and third-generation composites, more advanced than those used on the 787, were making him more favorable to the idea of an all-new, composite successor to the 737.

AIRBUS RELEASES THE A320NEO, SPELLING THE DEATH OF YELLOWSTONE 1

76. By December 2010, Boeing's competitor, Airbus, had launched the Airbus A320neo family, designed to improve fuel burn and operating efficiency with new engines: the CFM International LEAP and Pratt & Whitney PW1000G.

77. In early 2011, undeterred by the unveiling of the A320neo, Boeing CEO Jim McNerney gave a green light to replace the 737, announcing that Boeing intended to build a new aircraft to eclipse the re-engined Airbus A320neo, with a service entry date of around 2020.

78. Speaking at the Cowen and Company Aerospace and Defense Conference in New York City on February 10, 2011, McNerney said: “We're gonna do a new airplane. We're not done evaluating this whole situation yet, but our current bias is to not re-engine, is to move to an all-new airplane at the end of the decade, or the beginning of the next decade.”

79. While Boeing had continuously given small hints about its future plans, McNerney's comments left little ambiguity that a clean sheet design was in the company's

future. But Boeing corporate immediately sought to temper his comments, saying a 737 replacement was "not a done deal" and was "still being evaluated."

80. However, the idyllic scenario was showing some cracks. During that same talk, McNerney suggested that while Airbus had focused on its existing customer base, he saw a looming threat to the 737: "That doesn't mean that as [Airbus gets] deeper in the development they're not going to approach our customer base. I think they will." He also added that "We're going to be talking to our customers concretely over the next year or two, very concretely."

81. McNerney stated also that "I think in part because the re-engined Airbus airplane is out there. We're going to have more concrete discussions a little earlier, I think our customers are going to demand it and we will do it." Adding that "customers are going to wait for this airplane, in part because they're going to know what it looks like over the next 18 months."

82. Yet Boeing's chief admitted that the A320neo, "on paper closes the value gap that we have enjoyed on a typical cash on cash analysis, we tend to do better. And I think part of the rationale of the neo is to close that gap. Now, will that put some pressure on our margins? Yes, maybe, but they've got to complete the development."

83. Finally, McNerney added: "It's our judgment that our customers will wait for us, rather than move to an airplane that will obsolete itself when [Airbus develops] a new airplane. I understand why they're doing [the neo], we haven't seen the need for it yet. I feel pretty comfortable we can defend our customer base, both because they're not going ahead of us, they're catching up to us, and because we're going to be doing a new airplane that will go beyond the capability of what the neo can do."

84. Shortly thereafter, at the March 2011 ISTAT conference, BCA President James

Albaugh indicated he was not sure about a 737 re-engine, and that like Boeing CFO James A. Bell had stated at the JP Morgan Aviation, Transportation and Defense conference the same month, the plan was still a new plane.

85. Then, the unexpected happened. The A320neo gathered over 660 commitments at the June 2011 Paris Air Show, for a backlog of 1,029 units since its launch in December of 2010, a mere 6 months earlier, setting an order record for a new commercial airliner.

86. Boeing suddenly realized it had a problem.

87. On July 20, 2011, American Airlines, a seasoned customer of Boeing, announced an order for 460 narrowbody aircraft including 260 new Airbus A320s (130 A320ceos and 130 A320neos). American Airlines did say that it intended to order 100 re-engined 737s with CFM LEAP engines, the more fuel efficient and economical of the new generation engines, pending Boeing's decision on the retooling of the 737 aircraft versus new airplane design.

88. The American Airlines order unquestionably broke Boeing's monopoly with the airline and spurred Boeing's decision to develop a re-engined 737. "Not only have they sold aircraft to American, but they have forced Boeing's hand into pushing for a re-engined 737," said Saj Ahmad at the time, an analyst at FBE Aerospace in London, commenting on the deal. "This is significant for Airbus, but even more significant for Boeing," said Howard Wheeldon, a senior strategist at BGC Partners, a London brokerage. Boeing, he commented at the time, had been "chastened" by the market response to the A320neo, "which is making better headway than anyone had expected."

89. And just like that, on August 30, 2011, Boeing postponed the decision to develop a 737 replacement, and launched the 737 MAX, an updated and re-engined version of

the 737 NG.

90. In the announcement press release, Nicole Piasecki, vice president of Business Development and Strategic Integration, Boeing Commercial Aircraft, said that "The 737 MAX offers airlines the right solution and the best choice for creating the most successful future with improved profitability." The press release added that "The 737 MAX will deliver big fuel savings that airlines will need to successfully compete in the future. Airlines will benefit from a 7 percent advantage in operating costs over future competing aircraft as a result of optimized CFM International LEAP-I B engines, more efficient structural design and lower maintenance requirements."

THE A320NEO'S SECRET RECIPE IS COPIED BY BOEING

91. Never has an aircraft series been as successful as the A320neo and, subsequently, the 737 MAX. As of September 2018 (the month prior to the Lion Air 610 crash), Airbus had orders for over 6,500 A320neos, and Boeing had over 5,000 orders for the 737 MAX series. At an average of over $110,000,000 per aircraft, this represented a business volume of over $1 trillion dollars between the two manufacturers.

92. The rough cost of developing a brand-new aircraft for an airline manufacturer exceeds 10 billion dollars. The cost of re-developing the A320 for Airbus was only $1.32 Billion. It is therefore obvious that, where a manufacturer can garner sales without the need to introduce a new plane, it will.

93. But how did two airline manufacturers simultaneously strike gold with revamped engines? What were the reasons that brought about the success of the A320neo, and what did Boeing copy? How could new engines and fuel savings justify this?

94. The answer lies in the combination of the cost of training pilots coupled with

pilot shortage.

95. Pilot shortage is a well-known problem. It has been commented upon by many in the airline industry, including Boeing's CEO Dennis Muilenburg, who stated that the growing shortage of pilots represents "one of the biggest challenges" facing the airline industry.

96. Additionally, costs and downtime associated with training pilots and aircrews can have an enormous impact on airline uptime and profitability.

97. For example: prior to the introduction of the A320neo, Airbus had built and delivered over 8,000 A320 aircraft, with over 50,000 pilots worldwide flying A320 type aircraft. Each of these 50,000 pilots had to endure classroom training, simulator training, proficiency check rides, and generally cost an airline in excess of $50,000 to $75,000 in training costs to obtain the A320 type rating.

98. Simply put, a type rating is a regulating agency's certification of an airplane pilot to fly a certain aircraft type that requires additional training beyond the scope of the initial license and aircraft class training the pilot may hold. This certification allows flexibility between closely similar planes, which must maintain enough similarities between them so as to not require any additional training.

99. What Airbus did right with its formula turns out to be rather simple: each of the over 6,500 firm orders for new aircraft can be flown by each of the 50,000 current pilots type rated to fly the other A320s. In fact, to support the A320neo development and sales network, Airbus employed a "minimum-change" strategy. The A320neo was approved on the current A320 type certificate and hence all current A320 pilots did not need a new type rating for the new version of the aircraft.

100. Flying a new airplane version on the same type rating as a prior one means that

the airline has almost no pilot down time and no pilot cost to transition to the new aircraft. All that is required, instead of the costly and lengthy type rating training, is a limited didactical course aimed at instructing the pilot on the "minimal" differences between the plane's older version and the new version.

101. To airlines, this translated into the opportunity to have a brand-new aircraft that would improve passenger experience, while contemporaneously maximizing profitability by having greater range, better fuel economy, and increased capacity, while requiring minimal to no cost for pilot training.

102. In 2011, seeing the results of the sales of the A320neo, Boeing understood. It was now behind the ball and had to catch up.

103. Prior to the introduction of the 737 MAX, Boeing had built and delivered over 10,000 Boeing 737s, with almost 100,000 pilots worldwide type rated to fly them. To beat Airbus and maintain market share, Boeing had to deliver to market an airplane that would simultaneously greatly surpass the performance and profitability of the prior model (the 737NG) while being able to maintain the 737NG's flying characteristics as to not require a new type rating for pilots to fly.

104. This meant that if Boeing wanted to be successful, it had to respond to the A320Neo right away or else lose market share. Key to this notion was the need to achieve commonality for rating and training with the prior versions, as that would be a major cost saver for any airline that operated 737s.

105. Losing the commonality of rating would have devastating consequences for the marketability of Boeing. It would essentially place Boeing at a disadvantage with Airbus, as an airline currently operating 737s would be faced with identical costs to transition from an older

version of the 737 to the new 737 or to the new Airbus A320neo platform.

106. In response to Airbus's announcement that it would introduce a more fuel-efficient version of its A320, Boeing hence designed the 737 MAX with the goal of developing a plane that could be marketed to airlines on the basis of fuel savings, operating cost reductions, and other improvements over existing aircraft while simultaneously not requiring additional pilot training and type ratings.

107. Additionally, the drop-in program cost became a very real benefit too. Boeing CFO James Bell said during the company's second quarter 2011 earnings call that the research and development cost to Boeing to re-engine the 737 would be 10% to 15% of the cost it would have to expend for the design of a new airplane, which was at the time widely estimated by aerospace analysts to be $10-$12 billion.

108. Again, the choice was simple: rush in, spend 15% of what you would have otherwise spent developing Yellowstone 1, the code name "clean-sheet" replacement for the 737 family of aircraft, and sell thousands of aircraft. The 737 MAX was the clear winner against Yellowstone 1. Money won.

THE MAX – DESIGNED FOR SEAMLESS TRANSITION – WITH MCAS

109. Boeing designed the 737 MAX in a manner that would avoid wholesale aerodynamic and handling changes that would spur the Federal Aviation Administration to determine that existing 737 pilots would need substantial new and time-consuming training. In fact, the primary requirement for the MAX was that no design change could cause the FAA to conclude that airline pilots must be trained on the system differences between the prior 737 model, the 737 NG and the 737 MAX using simulators. By limiting the differences between the

models, Boeing would save airlines time and enormous money by not putting their 737 pilots through weeks of courses, including in simulators for hours, to train on the new aircraft, making a switch to the MAX the proverbial no-brainer.

110. Given the sheer number of pilots that this would involve, this was of paramount importance. For example, Southwest Airlines operates more than 700 Boeing 737, and employs almost 10,000 pilots all certified to fly the 737 platform. Ryanair operates more than 450 Boeing 737, with over 5,500 pilots. American Airlines and United Airlines each operate over 300 Boeing 737, with approximately 4,000 pilots each type rated to fly them.

111. For that reason, Boeing attempted to design the MAX so that it would handle almost identically to the 737 NG. However, this goal presented a problem for Boeing: because the MAX had new engines that were larger than those on the older version, they needed to be mounted higher and farther forward on the wings to provide adequate ground clearance.

112. Boeing determined that the bigger engines, mounted differently than on the previous version of the 737, would have a destabilizing effect on the plane, especially at lower speeds, high power scenarios, and during high-banked, tight-turn maneuvers. The concern was that an increased risk of the nose being pushed up at low airspeeds could cause the plane to get closer to the angle at which it stalls.

113. In response to this problem, i.e., to counter the destabilizing forces from the new engines, Boeing made the ill-fated decision to add a new software program, MCAS, to the existing flight control system present in the previous version of the 737. MCAS was written into the control law, the umbrella operating flight dynamics control system that, among other things, keeps the plane in "trim," or ensures that the nose is at the proper angle for the plane's speed and trajectory. In effect, the system would automatically push the nose down if it sensed

that the plane's angle was creating the risk of a stall.

114. Both MCAS and the speed trim system, the automatic stabilizer controls used on previous versions of the 737, operate primarily via the horizontal section of the 737's tail fin, which consists of a relatively narrow elevator in the back and the stabilizer in the front. In manual flight, pilots move the nose up and down by pulling or pushing the yoke to pivot the elevator one way or the other.

115. Ordinarily, a plane's stabilizers merely ensure that the up or down forces on the tail keep the plane balanced around its center of gravity. The pilots control the stabilizers electrically using switches at the top of the yoke. However, the MCAS was written to use the stabilizers in a different way: it would automatically offset the stall risk created by the change in the size and location of the engines.

116. The MCAS let the plane handle like its predecessors from a pilot's perspective, a fact that would be relevant when the FAA determined whether the pilots would need to spend time in class rooms and on simulators before they could fly the MAX.

117. Ultimately, the FAA determined that no simulator training was required. It also did not require any training about the MCAS, even if it was not present on previous versions of the 737. Perhaps though this would not have been so, had Boeing been candid about the feedback it was receiving from its own test pilots on the matter. In fact, recently revealed emails indicate that Boeing test pilots on the MAX were very surprised by the handling of the aircraft with the MCAS running awry. But that would have meant a new type rating, and the loss of this "battle".

118. Boeing hence conveniently determined that there was no need to provide any information about the MCAS because it "believed" that established emergency procedures

would cover any problems regardless of whether it stemmed from the original system or the modification. As a consequence of this, pilots flying the 737 MAX were unaware of the existence of MCAS even though it would play a key role in controlling the plane under certain circumstances.

119. As a direct consequence of Boeing's secrecy on the internal comments, coupled with the FAA's unawareness of the same, on October 29, 2018, Captain Suneja and First-Officer Harvino had no idea that the plane they were flying had been equipped with the MCAS system. They had not been told about it, had not trained for it, and would ultimately lose their life as a result of being blindsided by the system, taking with them the life of Andrea Manfredi.

120. To be clear and to be blunt: the MCAS system was not needed on the plane. It was not a safety device. It does not and did not improve the plane. It is and was a marketing tool.

121. As the plane itself goes, there is no doubt that the 737 MAX would have been certified without the MCAS system, but most certainly only with a new "type" designation, which would have required current 737 pilots to train in the simulator and obtain another "type rating." This is because the handling characteristics of the 737 MAX, when deprived of the MCAS, are universally regarded as sufficiently different than the rest of the 737 models that the FAA would have required (and perhaps did) that it be given a new class designation.

122. Putting this in perspective, the necessity of current 737 pilots obtaining a new 737 MAX type rating would have had very real consequences on Boeing's customers as well as Boeing's ability to market the plane and ensure its competitiveness on the open market. This translates into pilots having to take weeks to train, plus the airline spending an estimated $50,000 to $100,000 in costs for each pilot (which accounts for the Pilot's per diem, lodging,

transport, instruction, simulator time, literature, facilities, etc.). For an airline like Southwest, with 700 aircraft and 10,000 current pilots flying 737s, that would have meant a minimum combined paid downtime of 770 years (4 weeks per each pilot – at an annual average salary of $190,000 – that equates to approximately $145 million in lost work), plus another cumulative cost of about $1 billion dollars in hard training costs, for a combined total of over $1.3 billion.

123. Likewise, the numbers for an airline like American Airlines or United Airlines, with over 300 current 737s and 4000 pilots each, look equally daunting. These two would each face a cost of 300 years of pilot downtime (at an average salary of $122,000, that equates to over $37 million) plus hard costs of $400 billion, for a combined cost of almost ½ of a billion dollars for each of the two airlines.

OCTOBER 28, 2018 - FROM THE FLIGHT DECK

124. The Lion Air 610 accident crew, Captain Suneja and his First Officer Harvino, arrived at the airport before dawn to prepare for the flight.

125. As of that day, each had been through pro forma runaway-trim training in Lion Air simulators, but they had never heard of the MCAS and had no way of guessing from the maintenance log that there was a runaway trim possibility in their upcoming flight.

126. The pilots reasonably thought they had a healthy airplane.

127. For takeoff, Captain Suneja was at the controls and the First Officer was at the radios. Everything seemed fine during the takeoff roll, but as soon as Captain Suneja hauled back on his control column and the airplane lifted off, the left angle-of-attack sensor started reporting a problem. Unlike the accident of the Ethiopian Airlines plane, where the angle-of-attack sensor was simply reading a steady maxed-out angle, the left and right angle-of-attack

sensors on the Lion Air 610 plane were functioning, meaning they were both reading variables correctly. What was off was that the left sensor had a calibration error that caused it to read 20 degrees of angle more than what was actually occurring.

128. As soon as Captain Suneja rotated, and got in flight, the stick shaker began to rattle the left-side controls and Suneja lost reliable indications of airspeed and altitude on his flight display. In other words, the airplane misbehaved exactly as it had the night before. And exactly as had happened the night before, once again, everything was fine on the co-pilot's side.

129. Suneja, however, did not turn the flying over to Harvino but retained it for himself, despite the vibrations of the controls in his hands. A warning light indicating disagreement between the two angle-of-attack sensors was absent from the airplane because it was being offered by Boeing on the MAX only as part of an optional angle-of-attack instrumentation package. On previous models, the light had come as standard equipment.

130. With the stick shaker sounding off, Harvino asked air-traffic control for clearance to proceed to "some holding point" where he and Suneja could figure things out. Harvino mentioned a "flight-control problem" to air traffic control, but he was wrong.

131. The data shows that, by that point, they "only" had a stick shaker sounding off and some unreliable indications, but the still-unknown MCAS had not yet engaged because the wing flaps remained extended, and the MCAS system is not active when the flaps are extended. The only control problem they had experienced was some minor hand-flying issues due to a minor drift-down prior to continuing with the climb. In reaction to the drift-down, the controller asked them what altitude they wanted and Harvino opted for 5,000 feet.

132. As the airplane climbed through 2,150 feet, Harvino retracted the wing flaps and the MCAS kicked in for the first time, ambushing Captain Suneja with its 10 seconds of

double-fast nose-down trim and resulting in the 700-foot plunge seen on radar by the controller. Captain Suneja countered by using his thumb switch to apply a burst of nose-up trim as he hauled back on the control column and returned the airplane to its climb.

133. Adding to the workload, the controller chose this moment to issue the first needless turn and to formally clear the flight to 5,000 feet. First Officer Harvino dutifully responded. Captain Suneja then ordered him to put the wing flaps back down to where they had been.

134. Captain Suneja knew they had experienced some kind of runaway trim, but now with the flaps extended (and therefore, unbeknownst to him, with the unknown MCAS neutralized) it did not happen again.

135. Captain Suneja leveled at 5,000 feet and 30 seconds later ordered the flaps retracted. He may have made that choice because the airplane was flying at aerodynamic speeds in excess of 300 knots, which is not only fast for that altitude but also at least 50 knots faster than the maximum flap speed and enough to generate a loud overspeed clacker in the cockpit.

136. This time Captain Suneja was ready when the MCAS engaged, and he managed to avoid a dive by counter-trimming and hanging tight. The surprise was that after the assault ended, the MCAS paused and came at him again and again. In the right seat, Harvino was fumbling through checklists with increasing desperation, trying to figure out which one might apply, but to no avail.

137. A checklist addressing this situation would be added by Boeing a mere 10 days after this accident, as a result of this accident.

138. Captain Suneja was confronting an unknown beast. The MCAS was fast and relentless, and unfortunately stealthy, quiet and hidden. With no mention of it in the flight

manuals, checklists or past training. The fight continued for the next five minutes, during which time the MCAS mounted more than 20 attacks and began to prevail.

139. On the 737, the horizontal stabilizer is the large tail surface that can be angled down or up by the trimming mechanisms to change the airplane's pitch. The "elevators" are the hinged control surfaces mounted behind it and are manipulated by the use of primary controls to adjust the pitch. In regular flight, these two movable surfaces function in agreement to the same end — nose-up elevator, nose-up trim; nose-down elevator, nose-down trim. But in the runaway trim scenario, the relationship reverses. In the unusual case in which a pilot does not switch off the electric trim, the elevator has to be used against the runaway stabilizer to keep an airplane from getting out of control.

140. In order to certify an airplane, the elevator must succeed at this at all aerodynamic speeds up to the maximum speed, which, for a Boeing 737 MAX, is approximately 340 knots. This is because as the airspeed increases, so does the power of the stabilizer in relation to the elevators. The slope becomes slippery toward the end. If an inattentive crew allows a runaway trim to drop the nose too far below the horizon and the crew reacts with full up elevator, the nose will rise as certification standards require, but it may remain below the horizon for a period sufficient to allow the airspeed to continue to increase and bust right through the maximum speed, at which point recovery becomes impossible if a pilot does not use a copious amount of electric trim.

141. The story is complicated because the counter-trim that Captain Suneja had been thumbing to counter the MCAS was working, and full nose-down trim would have been avoidable even if the cutout switches were not thrown, so long as the pilots stayed in the fight.

142. But panic was understandably growing in the cockpit. That is readily apparent

from the voice recordings. The air-traffic control record shows the same. Suddenly it was Captain Suneja who was on the radio, and his transmissions made little sense. Apparently, he had taken over the desperate search through the checklists and handed the flying to Harvino. Harvino gave a few inputs of nose-up trim with his thumb switch but was quickly overwhelmed by the MCAS.

143. The MCAS pitched the airplane into a steepening dive at airspeeds that quickly exceeded the engineered limits of the aircraft. In full panic, Captain Suneja hauled his control column all the way back, giving full up elevator to no avail.

144. The nose dropped farther as the stabilizer prevailed. The crew of an off-shore oil platform saw the airplane in a nearly vertical dive before it hit the water.

145. Prior to impact, the 187 people on board of Lion Air 610 that were not in the flight deck with Captain Suneja and Harvino, would have lived an absolute nightmare. They experienced a roller coaster made of sudden, abrupt, and repeated nose up and nose down movements with the ocean coming closer and closer to the plane. While many family members choose to believe their loved ones were somehow unconscious, the accelerations were enough to impart fear, but unfortunately not enough to cause a loss of consciousness.

146. These people, which include Andrea Manfredi, knew they were in grave danger. They experienced the most terrifying of minutes, and in the end were aware of being perpendicular in an airplane screaming towards the ocean. They were physically jolted around in their seats and impacted by the plane as it rose and dove and observed the discomfort of their fellow passengers.

147. To be clear: this ordeal didn't last a mere few seconds. It lasted over 10 full minutes from the time of the first 700 ft abrupt dive. It included at least 17 cycles of up and

down, meaning, 17 times that the plane would head down and then climb back up. They experienced 10 full minutes, 600 seconds, of panic, fear, terror and, an overwhelming sense of inability to do anything.

THE MCAS IS FINALLY REVEALED

148. Eight days after the accident, Boeing issued a worldwide bulletin for 737 MAX pilots in which it continued to avoid mention of the MCAS but emphasized longstanding procedures provided in the "Runaway Stabilizer Non Normal Checklist (NNC)." Boeing was willing to leave its communications to that.

149. One day later, however, the FAA repeated the same information in the form of an "Emergency Airworthiness Directive," a regulatory mandate to change the airplane's flight manual.

150. That same day, the rest of the world followed suit.

151. Two days later, Boeing finally came forward. Under the title "Boeing Correspondence: Multi Operator Messages," it sent a two-paragraph email that named the MCAS for the first time.

152. Events would soon show that the situation was far worse than Boeing realized — to the extent that disseminating full descriptions of the MCAS was not sufficient to keep another accident from happening on March 10, 2019.

HOW WE GOT HERE

153. It is important to understand how the MCAS got out the door and onto production aircraft with at least two stunningly bone-headed design flaws. The first is that the

system relied on a single angle-of-attack sensor when there are two just begging to be queried. The second is that MCAS could trim the horizontal stabilizer to ridiculous extremes quickly when it was intended to be a minor augmentation system.

154. In designing the MAX, Boeing decided to supply the MCAS with data from one of the two angle-of-attack sensors at a time, depending on which of two redundant flight control systems happened to be active on that flight. This decision left the plane vulnerable to a single malfunctioning sensor.

155. On older 737s, pilots could pull back on the control stick when there were problems with the stabilizers. This would cut off electronic control of the stabilizers, allowing the pilots to control them manually. But when Flight 610's MCAS received faulty data from the angle-of-attack sensors that indicated the plane was pitched upward at an angle that risked a stall, and caused it to automatically push the nose down to avert the stall, the input of the pilots did not deactivate the MCAS. Hence, it appeared to the pilots as a persistent problem of some nature.

156. Boeing 's decision, made at the highest levels of the company, to use the existing design of the Boeing 737 NG, and camouflage the new MAX design as an evolution rather than a revolution, only to maintain type certification, was made to increase Boeing's profit. This was achieved because:

a) Using the existing design saved Boeing significant design and development costs. As stated by Boeing's CFO, the cost of re-tooling the 737 was 10-15% of the cost of designing a new aircraft;

b) Given the numbers of orders garnered by Airbus in the first 6 months of orders on the A320neo, using the existing design permitted Boeing to effectively rush the

announcement and order placement for the new aircraft, with a viable promise to get it to market quickly so that Boeing would not lose business to Airbus;

c) Using the existing design permitted Boeing to offer the Boeing 737 MAX to its customers, including Lion Air, with the major selling point of "minimum change." The 737 MAX, Boeing promised, would be approved on the current 737 type certificate and hence all current 737 pilots did not need a new type rating for the new version of the aircraft. Pilots already qualified to fly other Boeing 737s could move to the Boeing 737 MAX without undergoing any meaningful transition training, and without needing to be trained and tested in flight simulators and/or in the airplane before flying revenue flights (i.e., without need for a new type rating);

d) Using the existing design permitted Boeing to take advantage of its Organization Designation Authorization (ODA), granted to it by the FAA, to streamline and speed the certification of the Boeing 737 MAX as an amendment to the Boeing 737 type certificate; and

e) Using the existing design permitted Boeing to produce an updated, fuel-efficient airplane to compete with the Airbus A320neo more quickly and cost-effectively than if Boeing had developed a new model airplane.

BEFORE IT MARKETED AND SOLD THE BOEING 737 MAX TO AIRLINES, BOEING KNEW THAT THE AIRPLANE HAD INHERENTLY DANGEROUS AERODYNAMIC HANDLING DEFECTS THAT COMPROMISED SAFE OPERATION OF THE AIRPLANE

157. As described above, in designing the 737 MAX, Boeing made multiple modifications and updates to the structure and flight control systems of the prior version of the 737, the 737 NG.

158. As part of the modifications, Boeing replaced the CFM56-7 engines used in the Boeing 737 NG with larger, more fuel-efficient CFM LEAP-I B engines. Because the CFM LEAP-I B engines are substantially larger than the CFM56-7 engines, Boeing had to mount the engines higher and farther forward on the 737 MAX's wings and modify the airplane's nose gear to provide more ground clearance for the new, bigger engines.

159. The increased power and new location of the CFM LEAP-I B engines gave the Boeing 737 MAX markedly different handling characteristics, especially at high power, low speed flight envelopes. This included a propensity to abnormally pitch up under certain flight parameters, creating a risk that the airplane would suffer an aerodynamic stall and crash.

160. Pursuant to the FAA's Airworthiness Standards for Commercial Aircraft[1]: "No abnormal nose-up pitching may occur . . . . In addition, it must be possible to promptly prevent stalling and to recover from a stall by normal use of the controls."

161. Despite knowing that the Boeing 737 MAX had aerodynamic handling characteristics that were markedly different from prior versions, which would have disqualified it from being able to be approved on the current 737 type certificate (and hence preventing all current 737 pilots from flying the plane absent a new type rating) Boeing pressed on with the development of the airplane and instead quietly created and surreptitiously installed the MCAS to both mitigate the risk of a potential stall and, more importantly, to alter the flight perception for the pilots for it to resemble the Boeing 737 NG.

[1] 14 CFR Sec. 25.203(a) - Stall Characteristics.

162. However, in reality, while the MCAS, if properly operational, would indeed mitigate such a risk, it was also highly prone to dangerous behaviors in the event of data faults. This rendered the system defective. On or before October 29, 2018, Boeing knew and/or should have known of that defectiveness but did not take action thereon, thereby putting the flying public at risk including the Decedent. Such acts and omissions demonstrate reckless disregard and conscious s indifference for the safety of the flying public at risk, including the Decedent.

THE BOEING 737 MAX'S MCAS WAS DEFECTIVE

163. MCAS is a set of laws governing the flight dynamics control systems within the flight dynamics control computer code managed by the Boeing 737 MAX's Flight Control Computer. Boeing designed and installed MCAS in the Boeing 737 MAX in order to address the airplane 's aerodynamic handling characteristics and insure that the 737 MAX be approved on the current 737 type certificate (and hence allow all current 737 pilots to fly the plane without the need for a new type rating).

164. MCAS commands nose down trim when the active Flight Control Computer receives data from one of the airplane's angle-of-attack sensors that the aircraft's nose has pitched above a threshold level.

165. The angle-of-attack sensors, mounted on the left and right sides of the nose of the Boeing 737 MAX, are intended to measure the angle between the airplane's wings and oncoming airflow. When that data is coupled with airspeed the computer can be used for detecting the risk of an impending aerodynamic stall.

166. When Boeing designed the MCAS, it did so with the understanding that it would take data from only one of the 737 MAX’s two angle-of-attack sensors depending on

which side of the flight deck was doing the flying. Simply put, if the left pilot was doing the flying, the MACS would rely on the left side angle-of-attack sensor, and it would rely on the right-hand side angle-of-attack sensor when the right side of the flight deck was engaged.

167. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

168. Pitch control in the Boeing 737 MAX is controlled by hydraulically-powered elevators and an electrically-powered horizontal stabilizer in the airplane 's tail.

169. The Boeing 737 MAX's elevators are controlled by forward and aft movement of the pilots' control columns.

170. Movement of the Boeing 737 MAX's horizontal stabilizer can be controlled manually or automatically. Manually, a pilot controls it by engaging the pitch trim switches on the pilots' controls, which drive the electric trim motor, or, in an emergency, by rotating the airplane's pitch trim wheel which is mechanically connected to the airplane surface. Automatic movement is achieved through either autopilot inputs or MCAS-commanded automatic trim inputs.

171. Trim inputs in the Boeing 737 MAX turn a jack screw in the airplane 's tail, which raises or lowers the leading edge of the horizontal stabilizer.

172. A Boeing 737 MAX airplane pilot can countermand an MCAS-commanded nose down input by engaging yoke-mounted electric pitch trim switches to trim the nose back up, but the airplane's MCAS will reset, reactivate and push the nose down again when the pilot stops trimming the nose back up. It therefore lacks the ability to decipher pilot overriding.

173. The design decision by Boeing to have MCAS reset and reactivate after a pilot

has countermanded an MCAS nose down input created the danger that MCAS would fight against the efforts of pilots trying to save an aircraft from crashing in the event the MCAS was erroneously activating itself.

174. Additionally, the MCAS will continue to command the electric trim to push the nose down even if the pilots are giving directional inputs, including pulling back on the control sticks to change the airplane's attitude. This is because Boeing designed the laws controlling the system so that it would not disengage when pilots gave flight control inputs, no matter how intense.

175. Likewise, the MCAS will continue to command the electric trim to push the nose down even if when the aircraft is dangerously low and at a calculable risk of crashing. This is because Boeing designed the laws controlling the system so that it would consider neither the airplane's altitude nor the airplane's proximity to the terrain within its control laws.

176. Moreover, Boeing did not include in the laws governing the Boeing 737 MAX's MCAS an automatic ground collision avoidance system, leaving the airplane without an automatic safeguard that would have protected it from error-created emergencies that may have put the airplane in danger of crashing.

177. Moreover, Boeing designed the MCAS so that the laws governing the system did not consider, and/or disregarded, the Boeing 737 MAX's airspeed in deciding whether to automatically trim the airplane's nose down. This caused the MCAS to trim the plane's nose down even when the airspeed indicated that the airplane could not have been at a risk of aerodynamically stalling, as well as airspeeds that made manual recovery of the airplane overly difficult or impossible.

178. These design decisions could cause, and in fact did cause, the MCAS on Lion

Air Flight 610 to continue to trim the plane's nose down even when the plane was at a low altitude, in proximity of the ground, with a calculable risk of impacting the water below, and with the pilots giving significant inputs to the control columns.

179. Because Boeing's MCAS design does not permit pilots to disengage the MCAS, the only way that pilots can stop MCAS from forcing the airplane's nose down is to disengage the airplane's electric trim altogether.

180. The Boeing 737 MAX has a system whereby the autopilot, MCAS, and manual electric trim inputs are disconnected from the stabilizer electric trim motor. In fact, the flight deck has a "STAB TRIM PRI" cutout switch and a "STAB TRIM B/U" cutout switch, both located on the cockpit's control stand, and if either of these switches are positioned to "CUTOFF," the electric trim inputs are immediately disconnected.

181. After disengaging the electric trim however, the pilots would not be able to use the electric trim to control pitch and would only be able to stabilize and trim the aircraft by utilizing the flight controls and/or the manual pitch trim wheel.

182. As of October 29, 2018, however, this procedure was not identified anywhere in the flight control manuals, and the pilots were not trained or informed of this procedure to address the MCAS inputs.

183. On November 7, 2018, Boeing published an update to its operators' airplane flight manuals (AFMs) intended to provide flight crews with information on MCAS and the procedures needed to address a runaway stabilizer on the 737 MAX aircraft. Pilots were told to deactivate MCAS by switching off the plane's "STAB TRIM CUTOFF" switches, then to manually turn the stabilizer trim wheel located next to the pilot's seat to bring up the nose of the airplane.

184. The same day, November 7, 2008, the FAA issued an Emergency Airworthiness Directive (AD 2018-23-51) requiring the operators of Boeing 's 737-8 and 737-9 MAX aircraft to incorporate Boeing 's update into their respective AFMs within 30 days.

185. In its emergency directive, the FAA described an "urgent safety of flight situation" caused by an "unsafe condition" in the MAX: "if an erroneously high single angle-of-attack (AOA) sensor input is received by the flight control system, there is a potential for repeated nose-down trim commands of the horizontal stabilizer. This condition, if not addressed, could cause the flight crew to have difficulty controlling the airplane and lead to excessive nose-down attitude significant altitude loss, and possible impact with terrain."

186. Additionally, Boeing should have provided Boeing 737 MAX pilots with the ability to disengage a malfunctioning MCAS without losing their ability to control pitch with the airplane's electric pitch trim.

187. As of October 29, 2018 Boeing did not tell purchasers, owners, operators or pilots transitioning to the Boeing 737 MAX that Boeing had incorporated the MCAS into the airplane, or that the MCAS would automatically force the airplane's nose toward the ground if the selected angle-of-attack sensor provided the system with data that the nose of the airplane was angled too high.

188. Boeing decided that purchasers, owners, operators or pilots did not need to know about MCAS or to undergo any MCAS training, since MCAS was supposed to be an automatic system that required no pilot input to operate, and whose sole function was to safeguard the type rating of the plane.

189. By forcing the type rating to stay the same, Boeing also made so that pilots transitioning from the Boeing 737 NG did not need to be trained in the flight dynamics of the

aircraft, and in particular did not need simulator training or testing on how to handle emergencies caused by the airplane's MCAS.

190. Boeing knowingly failed to conduct a proper failure modes and effect analysis during development of the Boeing 737 MAX to ensure that the airplane's MCAS was safe. In particular, Boeing failed to properly consider the likelihood that Boeing 737 MAX angle-of-attack sensors may fail and mistakenly trigger MCAS to push 737 MAX aircraft into a dive toward the ground.

191. Additionally, Boeing did not sufficiently test the Boeing 737 MAX's MCAS during development to ensure that the automated system would not create a safety problem if it were to receive erroneous data from one of the airplane's angle-of-attack sensors.

192. In Boeing's efforts to get the 737 MAX to market on the existing 737 type rating, Boeing knowingly compromised the safety of Boeing 737 MAX crews and passengers.

BOEING OUTSOURCED THE DEVELOPMENT OF KEY SOFTWARE TO UNQUALIFIED TEMPORARY WORKERS

193. Like other modern aircraft, the Boeing 737 MAX is heavily dependent on computer software to function, especially in the world of flight dynamics.

194. However, rather than developing this key component of the aircraft in house, Boeing instead opted to outsource the task to foreign entities in developing countries that in turn used temporary and low-skilled workers. These workers, who were often paid as little as $9 per hour, often lacked a deep background in aerospace.

195. Boeing set the specification for the software coders to follow, but the coders nevertheless were unable to efficiently write the code properly, resulting in the coders taking far

longer to finish their tasks than Boeing's own software engineers would take to do the same task. This was due in part because Boeing had to repeatedly review the work and send it back to be corrected several times before it was usable.

196. This outsourcing and offshoring resulted in repeated communications issues and mistakes, which, while brought to Boeing's attention by its own engineers, were completely disregarded.

197. By way of example, Boeing contracted with HCL Technologies Ltd. to develop and test the Boeing 737 MAX's flight-display software, while another company, Cyient Ltd. developed software for flight-test equipment.

198. One of the reasons Boeing used foreign companies for manufacturing parts of its aircraft is to gain favor with local carriers. For example, Boeing opted to use Indian companies for the outsourced software development on its aircraft because doing so would generate favor with Indian purchasers. In exchange for an $11 billion order in 2005 from Air India, Boeing promised to invest $1.7 million in Indian companies. More recently, Boeing has won several orders for other Indian carriers, such as a $22 billion one in January 2017 to supply SpiceJet Ltd. This order included 100 737 MAX aircraft and represents Boeing's largest order ever from an Indian airline.

199. These orders are significant for Boeing because the Indian market has historically been dominated by its rival Airbus.

FIRST CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-DESIGN DEFECT-WRONGFUL DEATH

(By All Plaintiffs Against All the Boeing Defendants)

200. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as

though fully set forth herein.

201. Boeing is the manufacturer of the 737 MAX line of aircraft.

202. All 737 MAX aircraft suffer from multiple design defects, including, but not limited to an improper set of laws governing the flight dynamics control systems, and a catastrophically non-redundant logic applied to the MCAS governance.

203. The 737 MAX aircraft were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer. Ordinary consumers do not expect aircraft to have design defects that result in them having a heightened probability of crashing compared to other aircraft.

204. Had Boeing wished to do so, it could have used alternative designs in constructing its 737 MAX aircraft. In fact, other aircraft it manufactured and those manufactured by its competitors do not suffer from these design defects.

205. Moreover, the 737 MAX jet provided no advantage over other aircraft it manufactured or those manufactured by its competitors that offered sufficient utility to justify the dangers it posed. Tellingly, the dangers it posed were solely due to a marketing and commercial policy, not safety or technological progress.

206. The 737 MAX jet has a significant likelihood of causing injury as demonstrated by the fact that two fatal crashes involving the aircraft occurred mere months apart. Moreover, given the nature of the design defects, there was an especially large probability than any instance of the defects manifesting themselves would be fatal to all passengers and crew.

207. There were ample substitute airplane models, including other aircraft Boeing manufactured and those manufactured by its competitors. These models did not suffer from the design defects afflicting the 737 MAX aircraft and were therefore not anywhere near as unsafe.

208. Had Boeing wished to, it could have eliminated the design defects of the 737 MAX aircraft without impairing their usefulness or making them too expensive to maintain their utility. The only thing that would have changed would have been the marketability of the aircraft themselves. Other aircraft manufactured by Boeing do not suffer from these defects and those manufactured by its competitors do not either.

209. It was not possible to avoid the danger posed by the 737 MAX aircraft by the exercise of care in the use of the 737 MAX aircraft. Among other problems, Boeing failed to disseminate the information the pilots of Lion Air 610 would have needed to know to counteract the design defects that took their lives.

210. Passengers, purchasers and operators of the 737 MAX aircraft could not be anticipated to be aware of their design defects. Ordinarily air travel is regarded as safe and there was no general public knowledge of the dangers present in this model of jet. Nor were there any suitable warnings or instructions provided to passengers, purchasers, operators or pilots.

211. These design defects rendered the 737 MAX aircraft unreasonably dangerous.

212. These design defects were present at the time that the 737 MAX aircraft left Boeing's control.

213. Because of the design defects in the jet, including the plane's angle-of-attack sensors and flight dynamics control systems, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death

of Decedent and the damages suffered by his surviving family members.

SECOND CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-DESIGN DEFECT-SURVIVAL

(By All Plaintiffs Against All the Boeing Defendants)

214. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

215. Boeing is the manufacturer of the 737 MAX line of aircraft.

216. All 737 MAX aircraft suffer from multiple design defects, including, but not limited to an improper set of laws governing the flight dynamics control systems, and a catastrophically non-redundant logic applied to the MCAS governance.

217. The 737 MAX aircraft were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer. Ordinary consumers do not expect aircraft to have design defects that result in them having a heightened probability of crashing compared to other aircraft.

218. Had Boeing wished to do so, it could have used alternative designs in constructing its 737 MAX aircraft. In fact, other aircraft it manufactured and those manufactured by its competitors do not suffer from these design defects.

219. Moreover, the 737 MAX jet provided no advantage over other aircraft it manufactured or those manufactured by its competitors that offered sufficient utility to justify the dangers it posed. Tellingly, the dangers it posed were solely due to a marketing and commercial policy, not safety or technological progress.

220. The 737 MAX jet has a significant likelihood of causing injury as demonstrated

by the fact that two fatal crashes involving the aircraft occurred mere months apart. Moreover, given the nature of the design defects, there was an especially large probability than any instance of the defects manifesting themselves would be fatal to all passengers and crew.

221. There were ample substitute airplane models, including other aircraft Boeing manufactured and those manufactured by its competitors. These models did not suffer from the design defects afflicting the 737 MAX aircraft and were therefore not anywhere near as unsafe.

222. Had Boeing wished to, it could have eliminated the design defects of the 737 MAX aircraft without impairing their usefulness or making them too expensive to maintain their utility. The only thing that would have changed would have been the marketability of the aircraft themselves. Other aircraft manufactured by Boeing do not suffer from these defects and those manufactured by its competitors do not either.

223. It was not possible to avoid the danger posed by the 737 MAX aircraft by the exercise of care in the use of the 737 MAX aircraft. Among other problems, Boeing failed to disseminate the information the pilots of Lion Air 610 would have needed to know to counteract the design defects that took their lives.

224. Passengers, purchasers and operators of the 737 MAX aircraft could not be anticipated to be aware of their design defects. Ordinarily air travel is regarded as safe and there was no general public knowledge of the dangers present in this model of jet. Nor were there any suitable warnings or instructions provided to passengers, purchasers, operators or pilots.

225. These design defects rendered the 737 MAX aircraft unreasonably dangerous.

226. These design defects were present at the time that the 737 MAX aircraft left Boeing's control.

227. Because of the design defects in the jet, including the plane's angle-of-attack sensors and flight dynamics control systems, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

228. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

229. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

THIRD CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-MANUFACTURING DEFECT-WRONGFUL DEATH

(By All Plaintiffs Against All the Boeing Defendants)

230. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

231. Boeing is the manufacturer of the 737 MAX line of aircraft.

232. At least some 737 MAX aircraft, including the one in flight 610, suffer from multiple manufacturing defects, including, but not limited to non-calibrated angle-of-attack

sensors, and a flawed logic system in the flight dynamics control software applicable to the sensors.

233. The 737 MAX plane involved in Lion Air 610 was unreasonably dangerous because it was dangerous to an extent beyond that which would be contemplated by the ordinary consumer or user/operator. Ordinary consumers do not expect aircraft to have manufacturing defects that result in them having a heightened probability of crashing compared to other aircraft.

234. These manufacturing defects rendered the 737 MAX airplane involved in Lion Air 610 unreasonably dangerous.

235. These manufacturing defects were present at the time that the subject 737 MAX left Boeing's control.

236. Because of the design defects in the jet, including the plane's angle-of-attack sensors and flight dynamics control systems, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

FOURTH CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-MANUFACTURING DEFECT-SURVIVAL

(By All Plaintiffs Against All the Boeing Defendants)

237. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as

though fully set forth herein.

238. Boeing is the manufacturer of the 737 MAX line of aircraft.

239. At least some 737 MAX aircraft, including the one in flight 610, suffer from multiple manufacturing defects, including, but not limited to non-calibrated angle-of-attack sensors, and a flawed logic system in the flight dynamics control software applicable to the sensors.

240. The 737 MAX plane involved in Lion Air 610 was unreasonably dangerous because it was dangerous to an extent beyond that which would be contemplated by the ordinary consumer or user/operator. Ordinary consumers do not expect aircraft to have manufacturing defects that result in them having a heightened probability of crashing compared to other aircraft.

241. These manufacturing defects rendered the 737 MAX airplane involved in Lion Air 610 unreasonably dangerous.

242. These manufacturing defects were present at the time that the subject 737 MAX left Boeing's control.

243. Because of the design defects in the jet, including the plane's angle-of-attack sensors and flight dynamics control systems, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

244. Decedent and the other passengers and crew on Flight 610 suffered pain, injury,

terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

245. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

FIFTH CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-FAILURE TO WARN-WRONGFUL DEATH

(By All Plaintiffs Against All the Boeing Defendants)

246. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

247. Boeing is the manufacturer of the 737 MAX line of aircraft.

248. All 737 MAX aircraft suffer from multiple dangerous conditions, including, but not limited to an improper set of laws governing the flight dynamics control systems, and a catastrophically non-redundant logic applied to the MCAS governance.

249. The 737 MAX aircraft were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer, operator and/or flight crew. Ordinary consumers, purchasers, operators and pilots, including the crew of Lion Air 610, do not and did not expect the airplane to have dangerous conditions that result in them having a heightened probability of crashing compared to other aircraft.

250. Boeing was aware of the dangerous conditions and tendencies of the aircraft under certain circumstances, had seen them in the testing of the aircraft, knew that this

information pertaining to the characteristics and flight dynamics of the airplane was not publicly available, and that there was a real risk of harm occurring if it did not provide warnings or instructions addressing these circumstances and flight dynamics occurrences.

251. Nonetheless Boeing failed to disclose these unreasonably dangerous conditions to passengers, purchasers, operators and pilots, and failed to inform and/or instruct pilots on the proper use of the 737 MAX aircraft.

252. These dangerous conditions were present at the time that the subject 737 MAX plane left Boeing's control.

253. Because of the dangerous conditions in the airplane, including the plane's angle-of-attack sensors and flight dynamics control systems, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

SIXTH CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-FAILURE TO WARN-SURVIVAL

(By All Plaintiffs Against All the Boeing Defendants)

254. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

255. Boeing is the manufacturer of the 737 MAX line of aircraft.

256. All 737 MAX aircraft suffer from multiple dangerous conditions, including, but

not limited to an improper set of laws governing the flight dynamics control systems, and a catastrophically non-redundant logic applied to the MCAS governance.

257. The 737 MAX aircraft were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer, operator and/or flight crew. Ordinary consumers, purchasers, operators and pilots, including the crew of Lion Air 610, do not and did not expect the airplane to have dangerous conditions that result in them having a heightened probability of crashing compared to other aircraft.

258. Boeing was aware of the dangerous conditions and tendencies of the aircraft under certain circumstances, had seen them in the testing of the aircraft, knew that this information pertaining to the characteristics and flight dynamics of the airplane was not publicly available, and that there was a real risk of harm occurring if it did not provide warnings or instructions addressing these circumstances and flight dynamics occurrences.

259. Nonetheless Boeing failed to disclose these unreasonably dangerous conditions to passengers, purchasers, operators and pilots, and failed to inform and/or instruct pilots on the proper use of the 737 MAX aircraft.

260. These dangerous conditions were present at the time that the subject 737 MAX plane left Boeing's control.

261. Because of the dangerous conditions in the airplane, including the plane's angle-of-attack sensors and flight dynamics control systems, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed,

causing the death of Decedent.

262. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

263. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

SEVENTH CLAIM FOR RELIEF

NEGLIGENCE-WRONGFUL DEATH

(By All Plaintiffs Against All the Boeing Defendants)

264. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

265. Boeing is the manufacturer of the 737 MAX line of aircraft.

266. Boeing owes a duty of reasonable care to passengers on board the 737 MAX line of aircraft and their families.

267. Boeing breached its duty of reasonable care by manufacturing 737 MAX aircraft suffering from multiple dangerous conditions, including, but not limited to non-calibrated angle-of-attack sensors, flawed laws pertaining to flight dynamics, incomplete flight manuals, absent warning systems and other problems.

268. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly

repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

EIGHTH CLAIM FOR RELIEF

NEGLIGENCE-SURVIVAL

(By All Plaintiffs Against All the Boeing Defendants)

269. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

270. Boeing is the manufacturer of the 737 MAX line of aircraft.

271. Boeing owes a duty of reasonable care to passengers on board the 737 MAX line of aircraft and their families.

272. Boeing breached its duty of reasonable care by manufacturing 737 MAX aircraft suffering from multiple dangerous conditions, including, but not limited to non-calibrated angle-of-attack sensors, flawed laws pertaining to flight dynamics, incomplete flight manuals, absent warning systems and other problems.

273. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for

control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

274. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

275. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

NINTH CLAIM FOR RELIEF

BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY-WRONGFUL DEATH

(By All Plaintiffs Against All the Boeing Defendants)

276. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

277. Boeing is the manufacturer of the 737 MAX line of aircraft and was in the business of selling them at the time the Flight 610 airplane was purchased by CMIG Aviation for use by Lion Air.

278. The airplane on Flight 610 was not of the same quality as those generally acceptable in the trade, was not fit for the ordinary purpose for which such goods are used, and did not conform to the quality established by usage of trade. In particular, it suffered from at least the following defects that resulted in it being significantly more dangerous than aircraft

normally are: non-calibrated angle-of-attack sensor, flawed flight dynamics software, incomplete flight support manuals, incomplete emergency checklists, and missing warning instrumentation.

279. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

280. Plaintiffs took reasonable steps to notify Boeing of its breach of warranty by communicating with them, contemporaneously to the filing of the present lawsuit, that there was a breach of warranty. Moreover, Boeing is amply aware that the Flight 610 crash occurred because of the defects in its plane and that Decedent was killed as a result of the crash.

TENTH CLAIM FOR RELIEF

BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY-SURVIVAL

(By All Plaintiffs Against All the Boeing Defendants)

281. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

282. Boeing is the manufacturer of the 737 MAX line of aircraft and was in the business of selling them at the time the Flight 610 airplane was purchased by CMIG Aviation for use by Lion Air.

283. The airplane on Flight 610 was not of the same quality as those generally acceptable in the trade, was not fit for the ordinary purpose for which such goods are used, and did not conform to the quality established by usage of trade. In particular, it suffered from at least the following defects that resulted in it being significantly more dangerous than aircraft normally are: non-calibrated angle-of-attack sensor, flawed flight dynamics software, incomplete flight support manuals, incomplete emergency checklists, and missing warning instrumentation.

284. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

285. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

286. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

287. Plaintiffs took reasonable steps to notify Boeing of its breach of warranty by communicating with them, contemporaneously to the filing of the present lawsuit, that there was

a breach of warranty. Moreover, Boeing is amply aware that the Flight 610 crash occurred because of the defects in its plane and that Decedent was killed as a result of the crash.

ELEVENTH CLAIM FOR RELIEF

BREACH OF IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE-WRONGFUL DEATH

(By All Plaintiffs Against All the Boeing Defendants)

288. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

289. Boeing is the manufacturer of the 737 MAX line of aircraft and was in the business of selling them at the time the Flight 610 airplane was purchased by CMIG Aviation for use by Lion Air.

290. At the time of aforementioned purchase, Boeing knew or had reason to know that CMIG Aviation intended to give Lion Air the airplane for use in transporting passengers.

291. At the time of purchase, Boeing knew or had reason to know that both CMIG Aviation and Lion Air relied on Boeing's skill or judgment to furnish them a plane suitable for transporting passengers, namely one that was safe.

292. Lion Air and CMIG Aviation justifiably relied on Boeing's skill and judgment.

293. In particular, it suffered from at least the following defects that resulted in it being significantly more dangerous than aircraft normally are: non-calibrated angle-of-attack sensor, flawed flight dynamics software, incomplete flight support manuals, incomplete emergency checklists, and missing warning instrumentation.

294. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

295. Plaintiffs took reasonable steps to notify Boeing of its breach of warranty by communicating with them, contemporaneously to the filing of the present lawsuit, that there was a breach of warranty. Moreover, Boeing is amply aware that the Flight 610 crash occurred because of the defects in its plane and that Decedent was killed as a result of the crash.

TWELFTH CLAIM FOR RELIEF

BREACH OF IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE-SURVIVAL

(By All Plaintiffs Against All the Boeing Defendants)

296. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

297. Boeing is the manufacturer of the 737 MAX line of aircraft and was in the business of selling them at the time the Flight 610 airplane was purchased by CMIG Aviation for use by Lion Air.

298. At the time of aforementioned purchase, Boeing knew or had reason to know that CMIG Aviation intended to give Lion Air the airplane for use in transporting passengers.

299. At the time of purchase, Boeing knew or had reason to know that both CMIG Aviation and Lion Air relied on Boeing's skill or judgment to furnish them a plane suitable for transporting passengers, namely one that was safe.

300. Lion Air and CMIG Aviation justifiably relied on Boeing's skill and judgment.

301. In particular, it suffered from at least the following defects that resulted in it being significantly more dangerous than aircraft normally are: non-calibrated angle-of-attack sensor, flawed flight dynamics software, incomplete flight support manuals, incomplete emergency checklists, and missing warning instrumentation.

302. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

303. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

304. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

305. Plaintiffs took reasonable steps to notify Boeing of its breach of warranty by

communicating with them, contemporaneously to the filing of the present lawsuit, that there was a breach of warranty. Moreover, Boeing is amply aware that the Flight 610 crash occurred because of the defects in its plane and that Decedent was killed as a result of the crash.

THIRTEENTH CLAIM FOR RELIEF

NEGLIGENT INFLICTION OF EMOTIONAL DISTRESS-SURVIVAL

(By All Plaintiffs Against All the Boeing Defendants)

306. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

307. Boeing is the manufacturer of the 737 MAX line of aircraft.

308. Boeing owes and owed a duty of reasonable care to passengers on the 737 MAX line of aircraft.

309. Boeing breached its duty of reasonable care by manufacturing 737 MAX aircraft suffering from multiple dangerous conditions, including, but not limited to, non-calibrated angle-of-attack sensors, and a flawed logic system in the flight dynamics control software applicable to the sensors.

310. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

311. Decedent and the other passengers and crew on Flight 610 were directly impacted by the movement of the jet while it was "bucking."

312. In addition, Decedent necessarily observed and was aware of the impact of Boeing's negligence on fellow passengers and necessarily would have been reasonably fearful for his own safety.

313. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

FOURTEENTH CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-DESIGN DEFECT-WRONGFUL DEATH

(By All Plaintiffs Against All the Rosemount Defendants)

314. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

315. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

316. The angle-of-attack sensors contained design defects resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

317. The angle-of-attack sensors were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer.

Ordinary consumers do not expect aircraft incorporating the sensors to have a heightened probability of crashing compared to other aircraft.

318. Had Rosemount wished to do so, it could have used alternative designs in the angle-of-attack sensors.

319. Moreover, the angle-of-attack sensors provided no advantage over similar devices manufactured by Rosemount's competitors that offered sufficient utility to justify the dangers they posed.

320. The angle-of-attack sensors had a significant likelihood of causing injury as demonstrated by the fact that two fatal crashes caused by the sensors' failures occurred mere months apart. Moreover, given the nature of the design defects, there was an especially large probability that any instance of the defects manifesting themselves would be fatal to all passengers and crew.

321. Other angle-of-attack sensors are available that do not suffer from the design defects afflicting the Rosemount's angle-of-attack sensors and are therefore not anywhere near as unsafe.

322. Had Rosemount wished to, it could have eliminated the design defects of the angle-of-attack sensors without impairing their usefulness or making them too expensive to maintain their utility. angle-of-attack sensors manufactured by Rosemount competitors do not suffer from these defects.

323. It was not possible to avoid the danger posed by the angle-of-attack sensors installed in the 737 MAX aircraft by the exercise of care in the use of the 737 MAX aircraft. Among other problems, Rosemount had failed to disseminate the information pilots would need to know to counteract the design defects in angle-of-attack sensors and their erroneous readings

in the pilot's aircraft.

324. Passengers, operators and purchasers of the 737 MAX aircraft incorporating the angle-of-attack sensors could not be anticipated to be aware of their design defects. Ordinarily air travel is regarded as safe yet there was no general public knowledge of the dangers present in the angle-of-attack sensors present on this line of aircraft. Nor were there any suitable warnings or instructions provided to passengers, purchasers, operators or pilots.

325. In addition, had Rosemount wished to do so, it could have spread any loss by setting the price of the product or carrying liability insurance.

326. These design defects rendered the angle-of-attack sensors unreasonably dangerous.

327. These design defects were present at the time that the angle-of-attack sensors left Rosemount's control.

328. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

FIFTEENTH CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-DESIGN DEFECT-SURVIVAL

(By All Plaintiffs Against All the Rosemount Defendants)

329. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

330. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

331. The angle-of-attack sensors contained design defects resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

332. The angle-of-attack sensors were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer. Ordinary consumers do not expect aircraft incorporating the sensors to have a heightened probability of crashing compared to other aircraft.

333. Had Rosemount wished to do so, it could have used alternative designs in the angle-of-attack sensors.

334. Moreover, the angle-of-attack sensors provided no advantage over similar devices manufactured by Rosemount's competitors that offered sufficient utility to justify the dangers they posed.

335. The angle-of-attack sensors had a significant likelihood of causing injury as demonstrated by the fact that two fatal crashes caused by the sensors' failures occurred mere months apart. Moreover, given the nature of the design defects, there was an especially large probability that any instance of the defects manifesting themselves would be fatal to all passengers and crew.

336. Other angle-of-attack sensors are available that do not suffer from the design defects afflicting the Rosemount's angle-of-attack sensors and are therefore not anywhere near

as unsafe.

337. Had Rosemount wished to, it could have eliminated the design defects of the angle-of-attack sensors without impairing their usefulness or making them too expensive to maintain their utility. angle-of-attack sensors manufactured by Rosemount competitors do not suffer from these defects.

338. It was not possible to avoid the danger posed by the angle-of-attack sensors installed in the 737 MAX aircraft by the exercise of care in the use of the 737 MAX aircraft. Among other problems, Rosemount had failed to disseminate the information pilots would need to know to counteract the design defects in angle-of-attack sensors and their erroneous readings in the pilot's aircraft.

339. Passengers, operators and purchasers of the 737 MAX aircraft incorporating the angle-of-attack sensors could not be anticipated to be aware of their design defects. Ordinarily air travel is regarded as safe yet there was no general public knowledge of the dangers present in the angle-of-attack sensors present on this line of aircraft. Nor were there any suitable warnings or instructions provided to passengers, purchasers, operators or pilots.

340. In addition, had Rosemount wished to do so, it could have spread any loss by setting the price of the product or carrying liability insurance.

341. These design defects rendered the angle-of-attack sensors unreasonably dangerous.

342. These design defects were present at the time that the angle-of-attack sensors left Rosemount's control.

343. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly

repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

344. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

345. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

SIXTEENTH CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-MANUFACTURING DEFECT-WRONGFUL DEATH

(By All Plaintiffs Against All the Rosemount Defendants)

346. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

347. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

348. At least one of the angle-of-attack sensors on the Lion Air 610 aircraft contained manufacturing defects resulting in them suffering from an unacceptable rate of failure

and providing erroneous data.

349. The angle-of-attack sensors on the subject aircraft were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer. Ordinary passengers, operators, pilots and consumers do not expect aircraft incorporating the sensors to have manufacturing defects that result in them having a heightened probability of crashing compared to other aircraft.

350. These manufacturing defects rendered the angle-of-attack sensors unreasonably dangerous.

351. These manufacturing defects were present at the time that the angle-of-attack sensors left Rosemount's control.

352. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

SEVENTEENTH CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-MANUFACTURING DEFECT-SURVIVAL

(By All Plaintiffs Against All the Rosemount Defendants)

353. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

354. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

355. At least one of the angle-of-attack sensors on the Lion Air 610 aircraft contained manufacturing defects resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

356. The angle-of-attack sensors on the subject aircraft were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer. Ordinary passengers, operators, pilots and consumers do not expect aircraft incorporating the sensors to have manufacturing defects that result in them having a heightened probability of crashing compared to other aircraft.

357. These manufacturing defects rendered the angle-of-attack sensors unreasonably dangerous.

358. These manufacturing defects were present at the time that the angle-of-attack sensors left Rosemount's control.

359. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

360. Decedent and the other passengers and crew on Flight 610 suffered pain, injury,

terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

361. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

EIGHTEENTH CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-FAILURE TO WARN-WRONGFUL DEATH

(By All Plaintiffs Against All the Rosemount Defendants)

362. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

363. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

364. The angle-of-attack sensors on these aircrafts contained dangerous conditions resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

365. The angle-of-attack sensors were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer. Ordinary consumers, passengers, operators, purchasers, and pilots do not expect aircraft incorporating the sensors to have dangerous conditions that result in them having a heightened probability of crashing compared to other aircraft.

366. Rosemount was aware of these dangerous conditions, was aware that

information about the dangerous conditions was not publicly available, and that there was a risk of harm occurring if Rosemount did not provide warnings or instruction to passengers, purchasers, operators and pilots.

367. Rosemount failed to disclose these unreasonably dangerous conditions to passengers, purchasers, operators, and pilots, and failed to instruct pilots on the proper use of the angle-of-attack sensors and how to avoid mishaps when they failed.

368. These dangerous conditions were present at the time that the angle-of-attack sensors left Rosemount's control.

369. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

NINTEENTH CLAIM FOR RELIEF

STRICT PRODUCTS LIABILITY-FAILURE TO WARN-SURVIVAL

(By All Plaintiffs Against All the Rosemount Defendants)

370. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

371. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610

aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

372. The angle-of-attack sensors on these aircrafts contained dangerous conditions resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

373. The angle-of-attack sensors were unreasonably dangerous because they were dangerous to an extent beyond that which would be contemplated by the ordinary consumer. Ordinary consumers, passengers, operators, purchasers, and pilots do not expect aircraft incorporating the sensors to have dangerous conditions that result in them having a heightened probability of crashing compared to other aircraft.

374. Rosemount was aware of these dangerous conditions, was aware that information about the dangerous conditions was not publicly available, and that there was a risk of harm occurring if Rosemount did not provide warnings or instruction to passengers, purchasers, operators and pilots.

375. Rosemount failed to disclose these unreasonably dangerous conditions to passengers, purchasers, operators, and pilots, and failed to instruct pilots on the proper use of the angle-of-attack sensors and how to avoid mishaps when they failed.

376. These dangerous conditions were present at the time that the angle-of-attack sensors left Rosemount's control.

377. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed,

causing the death of Decedent.

378. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

379. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

TWENTIETH CLAIM FOR RELIEF

NEGLIGENCE-WRONGFUL DEATH

(By All Plaintiffs Against All the Rosemount Defendants)

380. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

381. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

382. Rosemount owed a duty of reasonable care to passengers, purchasers, operators and pilots on the 737 MAX aircraft incorporating their angle-of-attack sensors, as well as to their families.

383. Rosemount breached its duty of reasonable care by manufacturing angle-of-attack sensors that contained dangerous conditions resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

384. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

TWENTY-FIRST CLAIM FOR RELIEF

NEGLIGENCE-SURVIVAL

(By All Plaintiffs Against All the Rosemount Defendants)

385. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

386. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

387. Rosemount owed a duty of reasonable care to passengers, purchasers, operators and pilots on the 737 MAX aircraft incorporating their angle-of-attack sensors, as well as to their families.

388. Rosemount breached its duty of reasonable care by manufacturing angle-of-attack sensors that contained dangerous conditions resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

389. Because of the dangerous conditions in the subject airplane, including the

plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

390. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

391. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

TWENTY-SECOND CLAIM FOR RELIEF

BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY-WRONGFUL DEATH

(By All Plaintiffs Against All the Rosemount Defendants)

392. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

393. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

394. The angle-of-attack sensors were not of the same quality as those generally acceptable in the trade, were not fit for the ordinary purpose for which such goods are used, and did not conform to the quality established by usage of trade. In particular, they contained dangerous conditions resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

395. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

396. Plaintiffs took reasonable steps to notify Rosemount of its breach of warranty by communicating with them, contemporaneously to the filing of the present lawsuit, that there was a breach of warranty. Moreover, Rosemount is already aware that the Flight 610 crash occurred because of the defects in its plane and that Decedent was killed as a result of the crash.

TWENTY-THIRD CLAIM FOR RELIEF

BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY-SURVIVAL

(By All Plaintiffs Against All the Rosemount Defendants)

397. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

398. Rosemount designed and manufactured the angle-of-attack sensors installed on

the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

399. The angle-of-attack sensors were not of the same quality as those generally acceptable in the trade, were not fit for the ordinary purpose for which such goods are used, and did not conform to the quality established by usage of trade. In particular, they contained dangerous conditions resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

400. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

401. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

402. Accordingly, Decedent suffered a cognizable injury and sustained damages before his death and his claim continues as a survival claim.

403. Plaintiffs took reasonable steps to notify Rosemount of its breach of warranty by communicating with them, contemporaneously to the filing of the present lawsuit, that there

was a breach of warranty. Moreover, Rosemount is already aware that the Flight 610 crash occurred because of the defects in its plane and that Decedent was killed as a result of the crash.

TWENTY-FOURTH CLAIM FOR RELIEF

BREACH OF IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE-WRONGFUL DEATH

(By All Plaintiffs Against All the Rosemount Defendants)

404. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

405. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

406. At the time of purchase by Boeing, Rosemount knew or had reason to know that Boeing intended to use the angle-of-attack sensors it was purchasing by incorporating them into 737 MAX aircraft, and that Boeing would later sell the same aircraft to airlines for the purpose of transporting passengers.

407. At the time of purchase, Rosemount knew or had reason to know that Boeing relied on Rosemount's skill or judgment to furnish angle-of-attack sensors suitable for a plane transporting passengers, namely ones that would work properly and assist in keeping the plane safe.

408. Boeing justifiably relied on Rosemount's skill and judgment.

409. In particular, the angle-of-attack sensors contained dangerous conditions

resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

410. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent and the damages suffered by his surviving family members.

411. Plaintiffs took reasonable steps to notify Rosemount of its breach of warranty by communicating with them, contemporaneously to the filing of the present lawsuit, that there was a breach of warranty. . Moreover, Rosemount is already aware that the Flight 610 crash occurred because of the defects in its plane and that Decedent was killed as a result of the crash.

TWENTY-FIFTH CLAIM FOR RELIEF

BREACH OF IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE-SURVIVAL

(By All Plaintiffs Against All the Rosemount Defendants)

412. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

413. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

414. At the time of purchase by Boeing, Rosemount knew or had reason to know that

Boeing intended to use the angle-of-attack sensors it was purchasing by incorporating them into 737 MAX aircraft, and that Boeing would later sell the same aircraft to airlines for the purpose of transporting passengers.

415. At the time of purchase, Rosemount knew or had reason to know that Boeing relied on Rosemount's skill or judgment to furnish angle-of-attack sensors suitable for a plane transporting passengers, namely ones that would work properly and assist in keeping the plane safe.

416. Boeing justifiably relied on Rosemount's skill and judgment.

417. In particular, the angle-of-attack sensors contained dangerous conditions resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

418. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

419. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

420. Accordingly, Decedent suffered a cognizable injury and sustained damages

before his death and his claim continues as a survival claim.

421. Plaintiffs took reasonable steps to notify Rosemount of its breach of warranty by communicating with them, contemporaneously to the filing of the present lawsuit, that there was a breach of warranty. . Moreover, Rosemount is already aware that the Flight 610 crash occurred because of the defects in its plane and that Decedent was killed as a result of the crash.

TWENTY-SIXTH CLAIM FOR RELIEF

NEGLIGENT INFLICTION OF EMOTIONAL DISTRESS-SURVIVAL

(By All Plaintiffs Against All the Rosemount Defendants)

422. Plaintiffs hereby incorporate and reallege each of the preceding paragraphs as though fully set forth herein.

423. Rosemount designed and manufactured the angle-of-attack sensors installed on the Boeing 737 MAX line of aircraft, including the sensors installed on the Lion Air 610 aircraft, and worked with Boeing in the development of the Boeing 737 MAX.

424. Rosemount owed a duty of reasonable care to the passengers on the 737 MAX aircraft.

425. Rosemount breached its duty of reasonable care by manufacturing angle-of-attack sensors that suffered from dangerous conditions resulting in them suffering from an unacceptable rate of failure and providing erroneous data.

426. Because of the dangerous conditions in the subject airplane, including the plane's angle-of-attack sensors and flight dynamics software, Flight 610's MCAS incorrectly repeatedly believed the plane was in danger of stalling and forced the nose down. Despite human input to the contrary, where the pilot responded by pulling the nose up, the MCAS responded by repeatedly forcing the nose down and ignoring the pilot's inputs. This fight for

control over the aircraft repeated more than two dozen times until the plane ultimately crashed, causing the death of Decedent.

427. Decedent and the other passengers and crew on Flight 610 were directly impacted by the movement of the jet while it was "bucking."

428. In addition, Decedent necessarily observed and was aware of the impact of Rosemount's negligence on fellow passengers and necessarily would have been reasonably fearful for his own safety.

429. Decedent and the other passengers and crew on Flight 610 suffered pain, injury, terror, and severe emotional distress for the several minutes that the plane bucked as the MCAS and pilot fought for control. Decedent and the other passengers and crew were aware of the danger that they were in and their impending deaths because it was obvious that the plane was not operating normally and that the pilot was not in control of it.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs pray for judgment against Defendants the Boeing Company, Boeing International Sales Corporation, Boeing Domestic Sales Corporation, Boeing Financial Corporation, Boeing Sales Corporation, Rosemount Aerospace Inc., and United Technologies Corporation, individually and severally as follows:

Plaintiffs seek to recover the following damages and obtain the following relief from Defendants:

(a) Economic loss and damages suffered by Plaintiffs;

(b) Noneconomic damages;

(b) All reasonable and necessary attorneys' fees;

(c) Court costs;

(d) Pre and post-judgment interest;

(e) And such other relief to which Plaintiffs may show themselves justly entitled.

JURY DEMAND

Plaintiffs hereby demand a trial by jury on all issues so triable.

Dated: October 28, 2019

Respectfully Submitted,

/s/ FILIPPO MARCHINO, Esq.

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